

CLAIMS

1. A cleaning device for cleaning an edge portion of a board in which terminals are formed, characterized by comprising:

5 a brush which brushes the edge portion of said board and removes the dust attached to this edge portion;

ion injection device for injecting an ionized gas toward a portion to contact at least the edge portion of said board of this brush; and

10 discharge device for absorbing and removing the gas injected toward said brush from this ion injection device.

2. The cleaning device of the board according to claim 1, characterized in that said discharge device is provided with a discharge portion for discharging the gas and a nozzle member for 15 injecting the gas to blow away the dust removed by said brush toward said discharging portion.

3. The cleaning device of the board according to claim 2, characterized by comprising a cleaning case provided with an opening portion to allow said board to ingress, wherein said 20 discharge device is provided with a receiving member which is provided in opposition to said opening portion at the undersurface side of said cleaning case and receives the dust fallen from said brush.

4. A cleaning device for cleaning the edge portion of a board 25 in which terminals are formed, said cleaning device, characterized by comprising:

a stationary brush for brushing the edge portion of said board and removing the dust attached to this edge portion.

5. A cleaning method of cleaning an edge portion of a board in which terminals are formed, said cleaning method, characterized 5 by comprising the steps of:

brushing the edge portion of said board and removing the dust attached to this edge portion;

injecting an ionized gas toward the portion brushed by the brush of the edge portion of said board; and

10 absorbing and removing the gas injected toward said brush.

6. A flat display panel, characterized by being prepared by using the cleaning device of the board according to claim 1.

7. A flat display panel, characterized by being prepared by using the cleaning device of the board according to claim 4.

15 8. A cleaning device for cleaning an edge portion of a board in which terminals are formed, characterized by comprising:

a brush for brushing the edge portion of said board and removing the dust attached to this edge portion; and

20 discharge device for discharging the dust removed by said brush; and moreover,

said brush being constituted by conductive fiber.

9. The cleaning device of the board according to any one of claims 1 to 4 and 8, characterized by being provided with brush positioning device capable of adjusting the position of said brush in a direction 25 in and out of contact with said board.

10. The cleaning device of the board according to any one of claims 1 to 4, 8, and 9, characterized in that said board is allowed to

ingress along its edge portion, so that the edge portion of said board is cleaned by said brush, and at the same time, the gas is injected toward said brush, so that the dust removed from the edge portion of said board is blown away,

5 wherein the injection direction of said gas is set in a direction reverse to the ingress direction of said board.

11. The cleaning device of the board according to any one of claims 2, 3 and 8 to 10, characterized in that said discharge device is provided with a discharge portion for discharging the gas and a 10 nozzle member for injecting the gas to blow away the dust removed by said brush toward said discharge portion,

wherein said nozzle member is provided with an oblong injection orifice along the board surface of said board.

12. The cleaning method of the board according to claim 5, 15 characterized in that, even after completing the cleaning of said board, the gas is injected toward said brush.

13. A flat display panel, characterized by being prepared by using the cleaning device of the board according to claim 8.

14. Mounting equipment for mounting electronic parts on an edge 20 portion of a board in which terminals are formed, said mounting equipment of the electronic parts, characterized by comprising:

part conveying device in which a plurality of part holding portions are integrally provided along a peripheral direction at a predetermined interval and these parts holding portions are 25 intermittently driven in a peripheral direction;

a part supply portion for supplying said electronic parts successively to each part holding portion of said part conveying device intermittently driven; and

5 inspection device for inspecting whether or not the dust is attached to the electronic parts supplied and held by said part holding portion at a position where said part holding portion stops by the intermittent driving of said part conveying device.

15. The mounting equipment of the electronic parts according to claim 14, characterized by comprising control devices in which 10 whether or not the dust is attached to said electronic parts is determined based on the inspection result of said inspection device, and when the dust is not attached, said electronic parts are mounted on said board at a position in which said part holding portion stops subsequent to a position in which the electronic parts are 15 inspected by said inspection device, and when the dust is attached, the electronic parts are not mounted on the board but discarded.

16. A mounting method of mounting electronic parts on an edge portion of a board in which terminals are formed, said mounting method, characterized by comprising the steps of:

20 cleaning by blowing out an ionized gas, while brushing by the brush the edge portion in which the terminals of board are formed;

adhering a conductive bonding member to the cleaned edge portion of the board;

25 mounting said electronic parts on the edge portion of said board through said bonding member; and

determining whether or not the dust is attached by inspecting the electronic parts before mounting said electronic parts on the edge portion of said board, and deciding whether or not said electronic parts are mounted on said board according to the presence 5 or absence of the adherence of the dust.

17. The mounting method of the electronic parts according to claim 16, characterized in that, in case the dust is attached to the electronic parts, said electronic parts are discarded, and at the same time, the step of discarding is executed either after or before 10 the step of mounting the electronic parts on the board.

18. A flat display panel, characterized by being prepared by using the mounting equipment according to claim 14.

19. Mounting equipment for mounting electronic parts on an edge portion of a board in which terminals are formed, characterized 15 by comprising:

part conveying device in which a plurality of part holding portions are integrally provided along a peripheral direction at predetermined intervals and these part holding portions are intermittently driven in a peripheral direction;

20 a part supplying portion for supplying said electronic parts successively to each part holding portion of said part conveying device intermittently driven;

25 a brush capable of removing the dust attached to the electronic parts by brushing connection regions with said terminals of said electronic parts at a preceding stage of mounting said electronic parts supplied and held by said part holding portion on the edge portion of said board; and

discharge device for discharging the dust removed by said brush; and moreover,

said brush being constituted by conductive fiber.

20. Mounting equipment of mounting electronic parts on an edge portion of a board in which terminals are formed, characterized by comprising:

part conveying device in which a plurality of part holding portions are integrally provided along a peripheral direction at predetermined intervals and these part holding portions are 10 intermittently driven in the peripheral direction;

a part supplying portion for supplying said electronic parts successively to each part holding portion of said part conveying device intermittently driven;

15 a brush capable of removing the dust attached to the electronic parts by brushing the connection regions with said terminals of said electronic parts at a preceding stage of mounting said electronic parts supplied and held by said part holding portion on the edge portion of said board;

20 ion injection device for injecting an ionized gas toward the portion to contact at least the connection regions of said electronic parts of this brush; and

discharge device for discharging the gas injected from this ion injection means toward said brush.

21. The mounting equipment of the electronic parts according to 25 claims 19 or 20, characterized by comprising brush positioning device capable of adjusting the position of said brush in a direction in and out of contact with said electronic parts.

22. The mounting equipment of the electronic parts according to claim 21, characterized in that brush position detecting device capable of detecting the top end position of the brush is detachably attachably provided, and at the same time, this brush position detecting device comprises a pressure sensor capable of detecting the abutting of the top end of the brush against the sensor.

5 23. A flat display panel, characterized by being prepared by using the mounting equipment of the electronic parts according to claim 19.

10 24. A flat display panel, characterized by being prepared by using the mounting equipment of the electronic parts according to claim 20.